

What is claimed is:

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1. A cleaning apparatus, said apparatus comprising:
 - a) a plenum;
 - b) a head connected to said plenum said head including:
 - i) a nozzle;
 - ii) at least two banks of air jets wherein at least one bank of air jets is offset from a second bank of air jets; and
 - iii) at least three vacuum ports.
2. The cleaning apparatus of Claim 1 wherein said nozzle is positioned inside one of said vacuum ports.
3. The cleaning apparatus of Claim 1 wherein said nozzle is positioned outboard of said vacuum ports.
4. The cleaning apparatus of Claim 1 wherein the local velocity within a substantial portion of said head and said plenum is greater than about 2.0 m/s for a cleaning fluid droplet size of 450 μ m.
5. The cleaning apparatus of Claim 1 further comprising an aerodynamic surface which comprises the interior surface of said cleaning apparatus.
6. The cleaning apparatus of Claim 5 wherein said aerodynamic surface comprises the interior surface of said plenum.
7. The cleaning apparatus of Claim 5 wherein said aerodynamic surface comprises the interior surface of said head.
8. The cleaning apparatus of Claim 1 wherein at least one of said three vacuum ports includes a partition, said partition separating said vacuum port from at least one of said two banks of air jets, said partition including a beveled edge, said beveled edge oriented in the upward direction of air flow.
9. The cleaning apparatus of Claim 8 wherein said beveled edge comprises an angle of less than about 45°.

10. The cleaning apparatus of Claim 1 further comprising an anti-plate stripping element.

11. A cleaning apparatus, said apparatus comprising:

- a) a plenum;
- b) a head connected to said plenum said head including:

 - i) a nozzle;
 - ii) at least two banks of air jets wherein at least one bank of air jets is offset from a second bank of air jets;
 - iii) at least three vacuum ports; and
 - iv) an aerodynamic surface.

12. The cleaning apparatus of Claim 11 having two banks of air jets wherein one bank of air jets includes one more air jet than said second bank of air jets.

13. The cleaning apparatus of Claim 11 having two banks of air jets wherein one bank of air jets is offset by one-half pitch from the second set of air jets.

14. The cleaning apparatus of Claim 11 wherein each of said vacuum ports is separated by a partition, said partition extending upwardly from the bottom of said head, and wherein said partition includes a beveled edge oriented upwardly in the upward direction of air flow through said head, said beveled edge comprising an angle less than or equal to about 45°.

15. The cleaning apparatus of Claim 14 wherein said nozzle is outboard of said vacuum ports.

16. The cleaning apparatus of Claim 15 wherein the angular relationship between said nozzle and a surface as measured in the direction relative to normal of the surface is about -25° to about -75°.

17. The cleaning apparatus of Claim 14 wherein said nozzle is positioned inside one of said vacuum ports and wherein the angular relationship between said nozzle and a surface is about -6° to 12°.

18. A cleaning apparatus comprising a head and plenum said head and said plenum providing a conduit for vacuum, said vacuum having a local velocity within a substantial

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portion of said head and said plenum of greater than about 2.0 m/s a cleaning fluid droplet size of 450 μ m.

19. The cleaning apparatus of Claim 1 wherein the local velocity within a substantial portion of said head and said plenum is greater than the conveying velocity of the largest cleaning fluid droplet.

20. The cleaning apparatus of Claim 9 wherein said beveled edge comprises an angle of less than about 15°.

21. The cleaning apparatus of Claim 11 wherein the local velocity within a substantial portion of said head and said plenum is greater than the conveying velocity of the largest cleaning fluid droplet.

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